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STB SEQ-010

ACUSON

A Siemens Company

Sequoia® Ultrasound System

Service Training Manual



Sequoia® Ultrasound System Service Training Manual



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QRC	P/N-REVISION	INITIATOR	APPROVAL	DATE	CHANGE
			S. Williams	July 1999	Incorporate reviewer comments
A3210	P/N 59191 Rev. 1	J. Madarasz	S. Williams	Dec. 2000	Initial Release.

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PREFACE

Acuson is pleased to welcome you to the Sequoia® ultrasound systems. The Sequoia systems are special-purpose machines designed for general radiology, obstetrics, gynecology, cardiology, and/or vascular exams.

Acuson systems have an exceptional record of dependability, and Acuson has a customer service network ready to respond to the needs of our customers.

For information on Acuson's service offerings, please consult the Acuson Service Provider or call us at 800-9-ACUSON or 650-969-9112. For local numbers outside the United States, see the Contacting Acuson heading in this section.

ABOUT THIS MANUAL

The purpose of this manual is to familiarize service personnel with basic operation, maintenance, and troubleshooting of Sequoia systems. Service personnel are expected to be familiar with the use of basic test equipment (DVM, oscilloscope, etc.) and with basic ultrasound theory.

WARNING!

This manual is intended for use by trained service personnel. There are lethal voltages inside Sequoia systems. Bodily harm, possibly death, and damage to the system may result from untrained individuals opening the system.

Use this manual when servicing a Sequoia ultrasound system.

KEY CONVENTIONS

This manual uses several conventions to refer to controls on the system. The following list shows the conventions and their descriptions.

Symbol	Description
[LEFT]	Represents a soft key
CALC	Represents a key, knob, switch, or toggle control
CODE + SIZE	Means "Press the CODE key and press SIZE "
◆	Indicates steps to follow to perform a procedure

NOTE: A Note indicates especially important information. It is not an alert to a dangerous situation.

CAUTION! A Caution alerts the user to the potential for damage to the ultrasound system or other equipment.

WARNING!

A Warning alerts the user to a potential risk of death or serious injury to the user or patient.

Acuson provides special alphanumeric keys in several languages; however, in this manual, labels for all keys and annotation terms are given in English. To convert the system to another language, contact the Acuson Customer Service representative. For English and international keyboard layouts, see the Keyboard section of the *User Manual*.

OTHER SEQUOIA SYSTEM MANUALS

In addition to this manual, the following manuals are available for the Sequoia system:

Acuson Sequoia® Ultrasound System User Manual

The *User Manual* provides information used regularly to perform ultrasound exams. It explains how to operate the standard and optional features of the Sequoia system for radiology, obstetrics, cardiology, gynecology, and/or vascular exams, including the use of special purpose transducers such as endocavity transducers, transesophageal transducers, and interoperative transducers. It explains how to use transducer needle guides to perform biopsies. It also contains setup information, which is used less frequently. The *User Manual* addresses the reader who is familiar with ultrasound techniques; therefore, it does not include sonography training or clinical procedures.

Acuson Sequoia® Ultrasound System Reference Manual

The *Reference Manual* consists of the *Safety Manual*, the *Transducer Specifications Manual*, and the *Administrator Manual*.

- The *Safety Manual* explains system and transducer safety precautions and maintenance procedures.
- The *Transducer Specifications Manual* lists technical information about the individual transducers, including power value tables for all Acuson transducers.
- The *Administrator Manual* describes system and calculation package setup options. In addition, it contains information on setting up and operating peripheral devices with the Sequoia system.

CONTACTING ACUSON

For additional information about the Acuson system, contact the nearest Acuson office.

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COURSE PROCEDURES

**COURSE
ATTENDANCE**

This class runs Monday through Thursday, from 8:00 A.M. to 5:30 P.M. in the Building H Training Room, with a break for lunch at about 11:30 A.M. In addition, students may stay after class or contact the instructor for additional help as needed.

There will be breaks between the sessions; however, please be sure to return to the training room on schedule.

MODULES

Each module includes lab instructions, reference material, and evaluation questions. When the module is complete, confer with the instructor to determine whether the objectives have been met before going on to the next module.

RESOURCES

All references for the course are in the course modules and handouts. Lab equipment is at each lab station. Please do not remove supplemental resources from the room. For copies, contact an instructor.

Please feel free to ask questions at any time. There will be Post-It notes by the back door. For an issue or question that cannot be resolved immediately, make a note of it on a Post-It note and stick it on the back door.

PRACTICE

Feel free to use any classroom equipment to practice the module skills. Ask for help or clarification as needed.

COURSE SCHEDULE

The schedule is approximate and may vary. Short breaks will be taken between sections as appropriate. One hour will be given for lunch some time between 11:30 A.M. and 1:30 P.M.

MONDAY

TIME	TOPIC
8:30 A.M.	Course introduction & Acuson history
9:30 A.M.	Introduction to Ultrasound Physics
11:00 A.M.	Scanning lecture and lab: carotid artery
2:00 P.M.	General imaging demo and lab
3:00 P.M.	Cardiology demo and lab
4:00 P.M.	Image Enhancements and AEGIS

TUESDAY

8:00 A.M.	Replacing field replaceable units (FRUs)
10:30 A.M.	Scanner architecture lecture
1:00 P.M.	Verifying the Scanner lab
2:15 P.M.	System troubleshooting lab - Scanner

WEDNESDAY

8:00 A.M.	System architecture- DIMAQ workstation
9:30 A.M.	Diagnostics lecture and lab
11:00 A.M.	Software architecture lecture
1:15 P.M.	Factory tour
2:00 P.M.	System troubleshooting- DIMAQ workstation

THURSDAY

8:00 A.M.	Configuration lecture and lab
9:20 A.M.	Power supply lecture and lab
11:00 A.M.	Troubleshooting lecture
11:30 A.M.	Acuson luncheon
1:00 P.M.	Power supply and whole system troubleshooting
4:00 P.M.	Verification lecture and lab
5:00	Course conclusion: certificates and evaluations